UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 W. JACKSON BLVD
CHICAGO, IL 60604

14 SEP 2011

MEMORANDUM

SUBJECT: ACTION MEMORANDUM - Request for Approval and Funding for a Removal Action at the Sandoval Zinc Residential Site, Sandoval, Marion County, Illinois (Site ID # B5A8)

FROM: Kevin Turner, OSC
Emergency Response Branch 1

THRU: Jason H. El-Zein, Chief
Emergency Response Branch 1

TO: Richard C. Karl , Director
Superfund Division

I. PURPOSE

The purpose of this memorandum is to request and document your approval to expend up to $245,486 to conduct a time-critical removal action at the Sandoval Zinc Residential Site in Sandoval, Marion County, Illinois (the Site). The response actions proposed herein are necessary in order to mitigate threats to public health, welfare, and the environment posed by the presence of high levels of lead, zinc and arsenic in residential soils in Sandoval, Illinois. U.S. EPA has documented residential properties having lead, zinc and arsenic in its soils at concentrations which exceed levels that warrant a removal action.

The time-critical removal action proposed herein includes:

- Confirm and characterize vertical and horizontal extent of lead, zinc and arsenic soil contamination at each residential area proposed for clean-up
- Remove and properly dispose of soil and debris contaminated with lead at greater than 400 ppm.
- Backfill excavated areas with clean fill and restore properties to pre-removal conditions.

These response actions will be conducted in accordance with Section 104(a)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC § 9604(a)(1) to abate or eliminate the immediate threat posed to public health and/or the environment by the presence of the hazardous substances. The uncontrolled conditions of the

hazardous substances present at the Site require that this action be classified as a time-critical removal action. The project will require approximately 30 working days to complete.

There are no nationally significant or precedent setting issues associated with the Site. The Sandoval Zinc Site is currently proposed for the National Priorities List (NPL). However, the residential clean-up proposed herein is for work that is not a part of the NPL listing.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID: ILN 053 980 454
Category: Removal Action

The Sandoval Zinc Company smelter facility began operations as a primary zinc smelter between 1885 and 1890. In approximately 1915, the operations were converted to secondary zinc smelting. Compounds fed into the kilns were pure zinc, zinc oxide, zinc chloride, possibly aluminum chloride and other trace metals. The facility remained a secondary smelter until the facility closed in 1985. On June 27, 1972, the plant was completely destroyed by fire. The buildings were rebuilt and the plant continued operating until 1985. In December 1986, the Sandoval Zinc Company was officially dissolved and the owners declared bankruptcy.

During the first eighty-five years of operation, the principle waste emissions from the plant were metal laden cinder/slag and windblown ash. Large quantities of cinder/slag from the smelting process were used in constructing and surfacing secondary roads in the plant and as fill material on the property. Cinder/slag material that were unable to be utilized by the plant were placed into large piles on the property and offered to the public and the Village of Sandoval for use in constructing and surfacing roadways, driveways, sidewalks, and parking lots. Several areas throughout the Village of Sandoval exhibit evidence of the use of cinder/slag. Probing adjacent to driveways and sidewalks reveal cinder/slag, some of which have since been covered with concrete.

In October 2009, Illinois EPA collected residential soil samples from within the town of Sandoval and identified ten residential properties having elevated levels of total lead in its soil greater than the 1000 ppm, with the most elevated lead concentration at 49,900 ppm. Illinois EPA has identified the source for the lead as being the former smelter and that additional residential properties may also be threatened.

A. Site Conditions and Background

1. Removal Site Evaluation

a. Site Background - Illinois EPA

The Sandoval Zinc Company site was placed on CERCLIS on December 1, 1983 in response to concerns that past site activities may have resulted in soil and sediment contamination on the site and throughout the surrounding area. The Illinois EPA conducted a Preliminary Assessment

in 1986, a Screening Site Inspection in 1988, and an Expanded Site Inspection in 1997. Currently the former Sandoval Zinc site is abandoned.

An additional Expanded Site Inspection was conducted during the week of October19-22, 2009. During the ESI, the Illinois EPA sampling team collected fifteen sediment, twenty-seven soil, and four slag/waste samples from the Sandoval Zinc facility and surrounding area. The 2009 ESI was conducted to help determine the levels of contamination present at the Sandoval Zinc facility as well as any receptors which could potentially be impacted by former activities at the site. These potential receptors include designated wetlands, environmental and aquatic wildlife and human receptors.

The twenty-seven soil samples collected as part of the Illinois EPA's ESI were collected from residential areas within Sandoval, located west of the Sandoval Zinc property. These samples were collected to help determine whether contamination from Sandoval Zinc has been utilized in the filling of low residential areas and as base for roads and sidewalks and whether these activities could pose a hazard to the residents.

The soil samples were collected with hand trowels and analyzed for the inorganic portion of the Target Compound List. All soil samples were collected within the top six inches of soil. The Illinois EPA residential soil sampling results from the October 2009 sampling event are summarized in Table 4-3.

Based upon the Illinois EPA results, on March 11, 2010, the Illinois EPA submitted a letter to U.S. EPA requesting assistance from the U.S. EPA Region 5 Superfund Division in conducting a potential time-critical removal action at the Site.

b. Site Background – U.S. EPA Remedial Program

The FIELDS Group (U.S. EPA Region 5) conducted a soil sampling event from August 23 through August 26, 2010 on residential properties in Sandoval, Illinois (Marion County) as part of the Sandoval Zinc Superfund Site evaluation. The report produced by FIELDS details the XRF levels for Arsenic, Lead, and Zinc metals in residential soils, data collection methods, and analysis performed on these data. At the completion of the sampling event, 156 residential soil samples were collected representing 69 different properties.

2. Physical Location

The town of Sandoval is located at the intersection of State Route 50 (east/west) and 51 (north/south) in Marion County, Illinois (see Figure 1-1). Sandoval is about 58 miles from St Louis, Missouri and 86 miles from Springfield, Illinois. The geographical coordinates for the Site are 38° 36' 49.029" North latitude and -89° 06' 59.173" West longitude. The Canadian National (former Illinois Central) railroad travels north and south through the middle of town. The elevated levels of lead are located in a mixture of residential and commercial properties in Sandoval.

The town of Sandoval has a population of 1,335. Through the 90's Sandoval's population has declined by about 7%. It is estimated that in the first 5 years of the past decade the population of Sandoval has declined by about 5%. Since 2005 Sandoval's population has declined by about 1%.

The area surrounding the Site was screened for Environmental Justice (EJ) concerns using Region 5's EJ Assist Tool (which applies the interim version of the national EJ Strategic Enforcement Assessment Tool (EJSEAT)). Census tracts with a score of 1, 2, or 3 are considered to be high-priority potential EJ areas of concern according to EPA Region 5. The Site is in a census tract with a score of 6 (Attachment III). Therefore, Region 5 does not consider this Site to be a high-priority potential EJ area of concern. Please refer to the attached analysis for additional information.

3. Site Characteristics

On August 23 through 26, 2010, U.S. EPA mobilized its Superfund Technical Assessment and Response Team (START) contractor to the Site. U.S. EPA tasked START to perform a Site Investigation. Activities performed during the Site Investigation included:

- Identify the constituents and characteristic properties of surface and subsurface soils at residential properties throughout the City of Sandoval, and;
- Determine if a removal action is warranted at any of the residential properties based on NCP criteria.

U.S. EPA sampling results documented 9 residential properties having elevated total lead concentrations. Four of the properties have Toxicity Characteristic Leachate Procedure (TCLP) lead levels greater than the regulatory limit of 5 mg/L, with a maximum TCLP lead concentration documented at 53.1 mg/L (see Table 4-2). Based upon sampling results, an additional 2 properties were identified by the Fields Group to be included in this clean-up action.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The effects of lead exposure are more severe for young children and the developing fetus through exposure to a pregnant woman. The harmful effects of lead include premature births, lower birth weight, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. In adults, lead increases blood pressure, induces anemia as a result of the inhibition of hemoglobin synthesis, decreases reaction time, affects memory, and damages the male reproductive system. Lead is also considered by U.S. EPA to be a class B2 or probable human carcinogen.

The highest concentration of lead was over 49,900 ppm at one residential location. In addition, the Illinois Department of Public Health recommends that remediation efforts be initiated on the basis of the high levels of lead found in the surface soils and based upon the likelihood of sensitive populations (i.e. children and pregnant woman) being exposed to lead. Since the

neurological effects on young children and the developing fetus are considered to be irreversible, even short term exposures to elevated lead levels are of a public health concern.

The superfund Lead-Contaminated Residential Sites Handbook states that "Tier 1 properties have both sensitive populations (children up to 7 years old or pregnant women) and soil concentrations in the surface soils (0–1" depth) at or above 1,200 ppm (EPA, 1997b, 1997c). Based upon the Illinois EPA's and U.S. EPA's data collection activities eleven (11) properties are considered Tier 1 properties and qualify for a time critical removal action (TCRA). Data evaluation has determined that the contaminants of concern (COCs) for the Site are lead, zinc and arsenic in residential soils. The associated cleanup levels of 400 ppm, 23,000 ppm and 30 ppm, respectively, will be protective of human health and the environment at the site for current and future residential use.

NPL status

The Site is currently proposed for the National Priorities List (NPL). However, the residential contamination is not part of the NPL scoring package. In October 2009, Illinois EPA completed an Expanded Site Inspection at the former Sandoval Zinc Smelter. Based on the results of the Expanded Site Inspection, Illinois EPA requested assistance from the U.S. EPA Removal Program to evaluate potential threats to human health welfare and the environment posed by the spread of wastes from the former Sandoval Zinc Smelter site onto nearby residential properties.

5. Maps, pictures and other graphic representations

Figure 1-1 Site Location Map, Figure 3-1 August 2010 U.S. EPA Sampling Location Map, Figure 4-1 U.S. EPA 2010 Laboratory Results Map, Figure 5-1 Photolog and Attachment 3 - Environmental Justice (EJ) analysis are included as attachments.

B. Other Actions to Date

1. Previous actions

Previous actions by the Illinois EPA, private entities, and U.S. EPA have been documented in the Background section (Section II, A, 2).

2. Current actions

The Illinois EPA submitted a letter to U.S. EPA requesting assistance from the U.S. EPA Region 5 Superfund Division in conducting a potential time-critical removal action at the Site.

C. State and Local Authorities' Roles

On March 11, 2010, the Illinois EPA submitted a letter to U.S. EPA requesting assistance from the U.S. EPA Region 5 Superfund Division in conducting a potential time-critical removal action at the Site.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the Sandoval Zinc Residential Site present a threat to the public health or welfare, and the environment, and meet the criteria for a time-critical removal action as provided for in the NCP, 40 CFR 300.415(b)(2). These criteria include, but are not limited to, the following:

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

The town of Sandoval is next to the former Sandoval Zinc facility. Both the Illinois EPA and U.S. EPA have documented the presence of lead in residential yards above health standards. The health concerns at this Site are related to the fact that residents live in and amongst the lead slag that was brought in as fill material on residential properties, thereby potentially exposing young children, pregnant women and elderly individuals to contamination.

The effects of lead exposure are more severe for young children and the developing fetus through exposure to a pregnant woman. The harmful effects of lead include premature births, lower birth weight, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. In adults, lead increases blood pressure, induces anemia as a result of the inhibition of hemoglobin synthesis, decreases reaction time, affects memory, and damages the male reproductive system. Lead is also considered by U.S. EPA to be a class B2 or probable human carcinogen. Toxicity information is summarized in the references, ATSDR, 1993 and U.S. EPA, 2000.

The highest concentration of lead was over 49,900 ppm at one residential location. In addition, the Illinois Department of Public Health recommends that remediation efforts be initiated on the basis of the high levels of lead found in the surface soils and based upon the likelihood of sensitive populations (i.e. children and pregnant woman) being exposed to lead. Since the neurological effects on young children and the developing fetus are considered to be irreversible, even short term exposures to elevated lead levels are of a public health concern.

References:

ATSDR. 1993. Toxicological Profile for Lead. Agency for Toxic Substances and Disease Registry, Division of Toxicology. Atlanta, GA. U.S. Department of Health and Human Services, Public Health Service.

U.S. EPA. 2000. Integrated Risk Information System (IRIS). Database information located at http://www.epa.gov/iris/subst/index.html; U.S. Environmental Protection Agency.

Hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate or pose a threat of release;

The elevated concentrations of lead (over 49,900 ppm) in the soils at or near the surface pose a threat of further migration of contaminated materials due to rain or melting snow. There is also the possibility of airborne migration of lead attached to dust particles. People and animals contacting contaminated areas could track lead to other areas on-site, off-site or into their homes. Children play areas and gardens are other areas were exposed contaminated surface soils are likely to come in contact or migrate with sensitive populations.

Both the U.S. EPA and Illinois EPA XRF and analytical data documented total lead levels to be consistently greater than 1200 ppm in several residential locations.

Weather conditions that may cause hazardous substances, pollutants, or contaminants to migrate or be released;

Sandoval receives an average yearly precipitation of 30.16 inches and an average yearly snowfall of 12.37 inches. In 2009, average temperatures ranged from 88 to 18 degrees Fahrenheit (°F). Exposure pathways consist of direct contact with impacted soil and inhalation of airborne dust. Because of the extensive distribution of wastes, exposure could occur from human activities and weather-influenced distribution, redistribution, and suspension of dust containing heavy metal contaminants. Examples of human activities that could result in exposure include children digging and playing in residential yards, public street construction and improvement projects, wintertime snow removal, residential storm ditch re-grading, and new construction development of former residential properties and properties that lack adequate grass coverage of surface soil containing heavy metals. Furthermore, rain and wind could transport contaminants if human activities disturb soil before the rain and wind events.

The availability of other appropriate federal or state response mechanisms to respond to the release;

The Illinois EPA does not have the resources to respond to this Site. On March 11, 2010, the Illinois EPA submitted a letter to U.S. EPA requesting assistance from the U.S. EPA Region 5 Superfund Division in conducting a potential residential time-critical removal (TCRA) action at the Site.

IV. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the known hazardous substances on Site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The purpose of this time-critical removal action is to mitigate the immediate threats posed to the public health, welfare, or the environment by the presence of lead in the residential soils by addressing the most severely contaminated properties. As per Superfund Lead-Contaminated Residential Sites Handbook, CERCLA provides EPA with the authority to perform "removal" and "remedial" actions. Removal actions can be performed on mining and mineral processing (primary lead and other metals smelters) sites, and other sites with lead releases to the environment. The OSC proposes the following actions to mitigate threats posed by the presence of hazardous substances at the Sandoval Zinc Residential Site:

1) Develop and implement a Site Health and Safety Plan, including an air monitoring plan and Site contingency plan.

2) Develop and implement a Site security plan.

3) Develop and implement a fugitive dust control plan sufficient to stabilize the Site.

4) Confirm and characterize vertical and horizontal extent of lead soil contamination at the Site. Site Investigation sampling to date has delineated the vertical extent of contamination at 1 foot below ground surface. Horizontal extent of contamination sampling to date has indicated eleven residential yards are contaminated with lead greater than 1000 ppm .

5) Remove and properly dispose of (in accordance with U.S. EPA's Off-Site Rule (40 CFR § 300.440)) soil and debris contaminated with lead at greater than 1000 ppm from 11 properties of the Site determined to require cleanup by sampling and characterization performed.

6) Develop and implement a post excavation sampling plan to confirm that the lead cleanup goal (400 ppm) has been achieved at the residential properties addressed by this time critical removal action.

7) Backfill excavated areas with clean fill and restore properties to pre-removal conditions.

The removal action will be conducted in a manner not inconsistent with the NCP.

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health and safety and the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

Off-Site Rule

All hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment, storage, and disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, with the EPA Off-Site Rule, 40 C.F.R. § 300.440.

2. Contribution to remedial performance:

The proposed action will not impede future remedial actions based on available information. The former Sandoval Zinc facility is currently proposed for the National Priorities List (NPL). However, this residential clean-up is not part of the NPL scoring package. The Region 5 Remedial Program has conducted independent residential soil sampling. Based on their sampling efforts and the sampling efforts of the Illinois EPA, 11 residential properties are herein proposed for clean-up. These 11 properties represent the highest soil lead levels from the entire data set. The Remedial Program and Illinois EPA referred to Removal those properties above 1000 ppm for total soil lead. All 11 properties are above 1000 ppm for total soil lead.

3. Engineering Evaluation/Cost Analysis (EE/CA)

Not Applicable

4. Applicable or relevant and appropriate requirements (ARARs)

All applicable and relevant and appropriate requirements (ARARs) of Federal and State law will be complied with to the extent practicable. The OSC sent an e-mail dated April 4, 2011, requesting ARARs to Bruce Everetts, Illinois EPA Springfield Office, for any state ARARs. Any state ARARs identified in a timely manner will be complied with to the extent practicable.

5. Project Schedule

The removal activities are expected to take 20 on-site working days to complete.

B. Estimated Costs

The detailed cleanup contractor cost is presented in Attachment 1 and the Independent Government Cost Estimate is presented in Attachment 4. Estimated project costs are summarized below:

Regional Removal Allowance Costs	
Total Cleanup Contractor Costs (Includes a 10% contingency)	$190,069
Other Extramural Costs Not Funded from the Regional Allowance	
Total START, including multiplier costs	$33,100
Subtotal, Extramural Costs	$223,169
Extramural Costs Contingency (10% of Subtotal, Extramural Costs)	$22,317
TOTAL REMOVAL ACTION PROJECT CEILING	**$245,486**

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health and safety and the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances documented on Site, and the potential exposure pathways to nearby populations described in Section II, III, IV, and V above, actual releases of hazardous substances from this Site, if not addressed by implementing or delaying the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Enforcement Confidential Addendum.

The total U.S. EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be $428,850.[1]

($245,486 + 18,000) + (62.76% x $263,486) = $428,850

(Total Removal Project Costs + U.S. EPA Personnel Costs) + (Indirect Rate x Total of First Parenthetic) =

IX. RECOMMENDATION

This decision document represents the selected removal action for the Sandoval Zinc Residential Site, located in Sandoval, Marion County, Illinois, developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site. Conditions at the Site meet the NCP Section 300.415(b) criteria for a removal, and I recommend your approval of the proposed removal action.

The total removal action project ceiling, if approved, will be $245,486. Of this, as much as $223,169 comes from the Regional removal allowance.

APPROVE _____ DATE: 9/14/2011
Richard C. Karl, Director
for Superfund Division

DISAPPROVE _____ DATE: _____
Richard C. Karl, Director
Superfund Division

Enforcement Addendum

Figures:

1-1 Site Location Map
3-1 August 2010 U.S. EPA Sampling Location Map
4-1 U.S. EPA 2010 Laboratory Results Map
5-1 Photo Log

[1] Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

Tables:

4-1 U.S. EPA - XRF Sampling Data – August 2010
4-2 U.S. EPA - Analytical Sampling Results – August 2010
4-3 Illinois EPA Residential Data - 2009

Attachments:

I. Detailed Cleanup Contractor Cost Estimate
II. Administrative Record Index
III. Region V EJ Analysis
IV. Independent Government Cost Estimate

cc: S. Fielding U.S. EPA, 5203-G
Michael Chezik, U.S. DOI, **w/o Enf. Addendum**
T. Crause, Illinois EPA, **w/o Enf. Addendum**
Illinois EPA
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ENFORCEMENT CONFIDENTIAL ADDENDUM

SANDOVAL ZINC RESIDENTIAL SITE
SANDOVAL, MARION COUNTY, ILLINOIS

SEPTEMBER 2011

(REDACTED 3 PAGES)

ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY

TABLE 4-1 – AUGUST 2010 – U.S. EPA XRF SAMPLING DATA

Table 4-1
XRF Screening Locations and Results
Sandoval Zinc Residential Site Assessment
Sandoval, Marion County, Illinois

Property Address	Quadrant No. (surface)	XRF Result (ppm)	Quadrant No. (6 inches bgs)	XRF Result (ppm)
Mulberry	1	290	1	379
	2	172	2	124
	3	128	3	114
	4	Not screened because of property configuration		
Mulberry	1	646	1	712
	2	647	2	579
	3	143	3	NS
	4	126	4	NS
Mulberry	1	369	1	409
	2	533	2	681
	3	176	3	153
	4	214	4	169
Mulberry	1	584	1	926
	2	2,017	2	1,104
	3	416	3	302
	4	527	4	380
Clay	1	551	1	366
	2	1,744	2	3,282
	3	162	3	318
	4	3,304	4	8,074
Clay	1	1,370	Not screened per request of U.S. EPA OSC	
	2	219		
	3	91		
	4	115		
Clay	1	<50	Not screened because surface XRF results less than 50 ppm	
	2	<50		
	3	<50		
	4	<50		
Commercial	1	2,821	1	16,719
	2	3,779	2	2,578
	3	5,382	3	6,497
	4	NS	4	NS
Commercial	1	331	1	237
	2	1,091	2	1,189
	3	796	3	929
	4	574	4	663
Commercial	1	898	1	1,056
	2	378	2	319
	3	369	3	405
	4	401	4	385
Commercial	1	1,818	1	2,733
	2	1,450	2	1,670
	3	910	3	611
	4	786	4	1,248
Nebraska	1	400	1	NS
	2	203	2	NS
	3	372	3	NS
	4	942	4	625
Virginia	1	305	1	NS
	2	10,448	2	4,154
	3	Not screened because of size of property		
	4			

TABLE 4-2 – AUGUST 2010 - U.S. EPA ANALYTICAL SAMPLING RESULTS

Table 4-2
Soil Sample Analytical Results
Sandoval Zinc Residential Site Assessment
Sandoval, Marion County, Illinois

Chemical Name	40 CFR[a]	U.S. EPA RSL[b]	IEPA TACO[c]	Location ID	SZ-SO01	SZ-SO02	SZ-SO03	SZ-SO04	SZ-SO05	SZ-SO06
				Field Sample ID	SZ-SO01-082410	SZ-SO02-082410	SZ-SO03-082510	SZ-SO04-082510	SZ-SO05-082510	SZ-SO06-082510
				Sampling Date	8/24/2010	8/24/2010	8/25/2010	8/25/2010	8/25/2010	8/25/2010
				Sampling Location	212 S. Mulberry	202 E. Commercial	201 S. Clay	701 N. Vine	504 W. Virginia	236 E. Commercial
				Unit						
TCLP Metals										
Arsenic	5	NL	NL	mg/L	ND	0.0091	NA	NA	ND	NA
Barium	100	NL	NL	mg/L	1.1	0.57	NA	NA	0.8	NA
Cadmium	1	NL	NL	mg/L	0.0068	0.02	NA	NA	0.034	NA
Chromium	5	NL	NL	mg/L	ND	0.0051	NA	NA	ND	NA
Lead	5	NL	NL	mg/L	0.089	4.8	16.6	20.1	7.2	53.1
Mercury	0.2	NL	NL	mg/L	ND	ND	NA	NA	ND	NA
Selenium	1	NL	NL	mg/L	ND	ND	NA	NA	ND	NA
Silver	5	NL	NL	mg/L	ND	ND	NA	NA	ND	NA
RCRA 8 Metals (plus Zinc)										
Arsenic	NL	0.39	11.3	mg/kg	8.7	21.5	32.9	10.5	34.9	24.1
Barium	NL	15,000	5,500	mg/kg	149	193	210	389	261	498
Cadmium	NL	70	78	mg/kg	0.85	2.1	2.7	3.9	4.8	4.3
Chromium	NL	120,000	230	mg/kg	13.7	14.1	11.6	20.8	14.9	15.3
Lead	NL	400	400	mg/kg	584	6,030	6,510	3,400	8,740	4,210
Mercury	NL	5.6	23	mg/kg	0.12	0.22	0.19	0.16	0.17	0.24
Selenium	NL	390	390	mg/kg	0.92	1.6	0.82	2	1.6	1.1
Silver	NL	390	390	mg/kg	0.69	1.6	2.6	1.2	4.9	2.1
Zinc	NL	23,000	23,000	mg/kg	1,520	6,210	10,700	27,000	19,300	13,400

Notes:
Result exceeds 40 CFR screening criterion.
Result exceeds U.S. EPA RSL screening criterion.
Result exceeds IEPA TACO screening criterion.

CFR = *Code of Federal Regulations*
ID = Identification
IEPA = Illinois Environmental Protection Agency
mg/kg = Milligram per kilogram
mg/L = Milligram per liter
NA = Not analyzed
ND = Not detected
NL = Not listed
RCRA = Resource Conservation Recovery Act
RSL = Regional Screening Level
TACO = Tiered Approach to Corrective Action Objectives
TCLP = Toxicity Characteristic Leaching Procedure
U.S. EPA = United States Environmental Protection Agency

a 40 CFR, Part 261
b U.S. EPA RSL - Residential Soil
c IEPA TACO Tier I Residential Soil - Ingestion

Table 4-3 – Illinois EPA Residential Data – 2009

Sample Number :	ME00X0		ME00X1		ME00X4		ME00X5		ME00X6		ME00X7		ME00X8		ME00Y0	
Sampling Location	X117		X118		X121		X122		X123		X124		X125		X127	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	10/21/2009		10/21/2009		10/21/2009		10/21/2009		10/21/2009		10/22/2009		10/22/2009		10/22/2009	
Time Sampled :									dup of X122							
%Solids :	79.6		74.1		81.7	0	74.4	0	77.3	0	75	0	56		79.8	
Dilution Factor :	1		1		1	0	1	0	1	0	1	0	1		1	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	6720		8460		7140		6820		7240		9410		9580		8650	
ANTIMONY	125		914		2.3	J	15.5	J	20.3	J	200	J	6.5	J	1.6	J
ARSENIC	30		181		6.4		16.7		21.9		23.3		8.7		9.7	
BARIUM	265		293		102		265		322		232		459		181	
BERYLLIUM	1		1.6		0.6	J	0.99		0.94		1.7		1.4		0.84	
CADMIUM	3.2		2.7		0.61	U	1.2		2.5		8.9		2.1		0.59	U
CALCIUM	2070		4620		43900	J	111000	J	41700	J	4270	J	21000	J	2740	J
CHROMIUM	9.9		14.9		10.6		17.6		26.5		27.7		23		14.8	
COBALT	7.2		14.8		5.5	J	5.9		7.1		28.2		6.6	J	7.3	
COPPER	7890		12800		65.2		275		386		5470		158		39.4	
IRON	21800		103000		13000		21100		25300		29100		20600		22900	
LEAD	5000		49900		103	J	820	J	1010	J	11800	J	1400	J	87.7	J
MAGNESIUM	686		385	J	2940	J	4250	J	6660	J	891	J	2790	J	1530	J
MANGANESE	852	J	805	J	750		322		380		548		623		589	
MERCURY	1		0.26		0.13		0.7		0.74		0.16		0.84		0.078	UJ
NICKEL	46.7		97.4		53.3		48.2		62		1550		25.7		18.6	
POTASSIUM	704		338	UJ	524	J	534		556		613		1470		748	
SELENIUM	3.4		9.9		1.8	J	2.8	J	3.5		4.2		4	J	3.3	J
SILVER	1.3		8.9		1.2	U	1	U	0.9	U	4.7	J+	1.6	U	1.2	U
SODIUM	234	UJ	538		112	UJ	442	UJ	396	UJ	466	UJ	561	UJ	242	UJ
THALLIUM	2.4	U	2.4	U	3.1	U	2.5	U	2.3	U	2.7	U	3.9	U	3	U
VANADIUM	26.9		27.5		18.3		20.3		22.8		16.7		40.2		26	
ZINC	9260		37500		1030		2940		3640		107000		1710		354	
CYANIDE	0.17	J	3.1		3.1	U	0.16	J	0.083	J	3.2	U	4.4	U	3	U

Sample Number:	ME00T2		ME00T3		ME00T4		ME00T5		ME00T8		ME00T9		ME00W0		ME00W1	
Sampling Location:	X101		X102		X103		X104		X105		X106		X107		X108	
Matrix:	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units:	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled:	10/20/2009		10/20/2009		10/20/2009		10/20/2009		10/21/2009		10/21/2009		10/21/2009		10/21/2009	
Time Sampled:																
%Solids:	79.3		77.6		73.4		73.6		65.1		72.7		76.6		76.6	
Dilution Factor:	1		1		1		1		1		1		1		1	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	9940		5970		9370		4150		8020		9200		7920		7590	
ANTIMONY	81.4		20.3		22.8		6.8		13.8		6.0	J	4.4	J	18.6	
ARSENIC	34.2		11.1		15.7		11.9		9.1		12.6		9.0		17.2	
BARIUM	377		287		1280		563		239		826		486		243	
BERYLLIUM	2.3		0.9		0.7		1.5		1.0		1.8		2.2		0.9	
CADMIUM	0.2	J	1.3		0.7	U	0.6	U	0.9		1.2		0.7	U	0.4	J
CALCIUM	9060		30100		2870		1830		8030		6100		7330		7590	
CHROMIUM	19.4		12.4		13.3		17.0		15.8		25.8		15.7		25.2	
COBALT	9.0		6.2		8.3		6.2		7.2		9.1		5.9	J	7.4	
COPPER	780		289		443		110		261		147		92		319	
IRON	49800		18200		16000		75700		22900		41900		40700		27000	
LEAD	5130		1070		825		314		853		1140		163		1060	
MAGNESIUM	766		11700		1340		289	J	971		938		504	J	1330	
MANGANESE	244	J	556	J	743	J	80	J	403	J	634	J	168	J	765	J
MERCURY	0.2		0.4		0.1		0.6		0.2		2.3		0.2		0.3	
NICKEL	58.9		36.1		38.6		21.4		40.5		27.2		18.5		39.7	
POTASSIUM	804		638		564	J	2700		1050		1170		1320		1180	
SELENIUM	6.7		3.1	J	2.1	J	10.9		3.4	J	6.1		6.5		3.9	J
SILVER	1.3	U	1.1	U	1.4	U	1.1	U	1.3	U	1.2	U	1.3	U	1.2	U
SODIUM	978		315	UJ	151	UJ	1740		298	J	494	J	932		256	J
THALLIUM	3.2	U	2.8	U	3.4	U	4.1		3.2	U	2.9	U	0.4	J	3.1	U
VANADIUM	41.3		21.2		27.6		46.1		33.2		39.0		47.1		29.0	
ZINC	6140		2330		1920		247		2680		1260		314		7040	
CYANIDE	3.0	U	3.2		3.3	U	3.4		3.8	U	0.5		3.3	U	3.1	

Sample Number:	ME00W2		ME00W3		ME00W4		ME00W5		ME00W6		ME00W7		ME00W8		ME00W9	
Sampling Location:	X109		X110		X111		X112		X113		X114		X115		X116	
Matrix:	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units:	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled:	10/21/2009		10/21/2009		10/21/2009		10/21/2009		10/21/2009		10/21/2009		10/21/2009		10/21/2009	
Time Sampled:																
%Solids:	75.3	0.0	77.4		77.4		74.0		73.1		75.0		76.4		77.2	
Dilution Factor:	1	0	1		1		1		1		1		1		1	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	7870		8140		6050		7920		7660		7990		5810		5300	
ANTIMONY	10.2		8		6.6		74.4		4.1	J	5.6	U	6.9	J	3.4	J
ARSENIC	10.5		7.3		8.2		16.5		7.4		4.8		7.2		7.2	
BARIUM	164		169		118		314		341		102		549		143	
BERYLLIUM	0.7		0.62		0.41	J	0.92		2.1		0.5		0.41	J	0.67	
CADMIUM	0.4	J	0.41	J	0.49	U	1.6		0.55	U	0.47	U	0.65	U	0.51	U
CALCIUM	5130		4380		2190		9180		4870		1140		1900		1420	
CHROMIUM	10.8		11.8		9.6		15.1		14.7		9.9		8.3		9.4	
COBALT	5.2		5	J	4.7	J	7.8		8.6		3.7	J	14.8		3.6	J
COPPER	90		144		95		1850		66		11		96		47	
IRON	12700		13100		12000		23200		35100		10600		11600		14400	
LEAD	493		400		284		1970		202		20		402		333	
MAGNESIUM	1530		955		662		1190		526	J	763		634	J	517	
MANGANESE	491	J	541	J	741	J	740	J	494	J	334	J	3760	J	494	J
MERCURY	0.2		0.16		0.19		0.16		1		0.09	UJ	0.063		0.091	UJ
NICKEL	16.1		25.8		20.7		120		22.9		5.7		9.1		7.2	
POTASSIUM	455	UJ	384	UJ	368	UJ	613		1010		502		352	UJ	265	UJ
SELENIUM	1.8	J	2	J	1.8	J	3.1	J	4.8		1.6	J	1.9	J	2.1	J
SILVER	1.0	U	1	U	0.98	U	1	U	1.1	U	0.94	U	1.3	U	1	U
SODIUM	127	UJ	142	UJ	117	UJ	278	UJ	795		100	UJ	178	UJ	113	UJ
THALLIUM	2.6	U	2.6	U	2.4	U	2.6	U	2.8	U	2.3	U	3.3	U	2.6	U
VANADIUM	22.5		23.4		22.5		30.6		42.9		22		28.1		25.5	
ZINC	1800		956		899		4280		783		62		383		346	
CYANIDE	3.3	U	3.1	U	3		3.2		0.089	J	3.1		3.1	U	3	

ATTACHMENT I

DETAILED COST ESTIMATE

SANDOVAL ZINC RESIDENTIAL SITE
SANDOVAL, MARION COUNTY, ILLINOIS
SEPTEMBER 2011

The estimated cleanup contractor (ERRS) costs necessary to complete the removal action at the Sandoval Zinc Residential Site are as follows:

Personnel & Equipment	$63,099
Materials/Miscellaneous	$68,691
Transportation and Disposal	$41,000
Total	$172,790
Plus 10% Contingency	$17,270
Total ERRS Contractor Costs	**$190,069**

ATTACHMENT II

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
SANDOVAL ZINC RESIDENTIAL SITE
SANDOVAL, MARION COUNTY, ILLINOIS

ORIGINAL
MAY 2011

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	01/06/10	Weston Solutions, Inc.	U.S. EPA	Site Assessment Report for the Sandoval Zinc Residential Site	62
2	03/11/10	Everetts, B., Illinois EPA	Crosetto, T., U.S. EPA	Letter re: IL EPA Request that U.S. EPA Assign an OSC to Conduct a Time-Critical Removal Assessment and Possible Removal Action Within Residential Properties Near the Sandoval Zinc Site	2
3	04/05/10	Illinois EPA	U.S. EPA	Expanded Site Inspection Report for the Sandoval Zinc Company	32
4	01/00/11	U.S. EPA	File	Preliminary Report of Residential Soil Sampling Event, 23-26 August 2010 XRF Results at the Sandoval Zinc Site	13
5	04/04/11	Turner, K., U.S EPA	Everetts, B., Illinois EPA	Request for State ARARs	1
6	00/00/00	Turner, K., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request for Approval and Funding for a Removal Action at the Sandoval Zinc Residential Site **(PENDING)**	

ATTACHMENT III

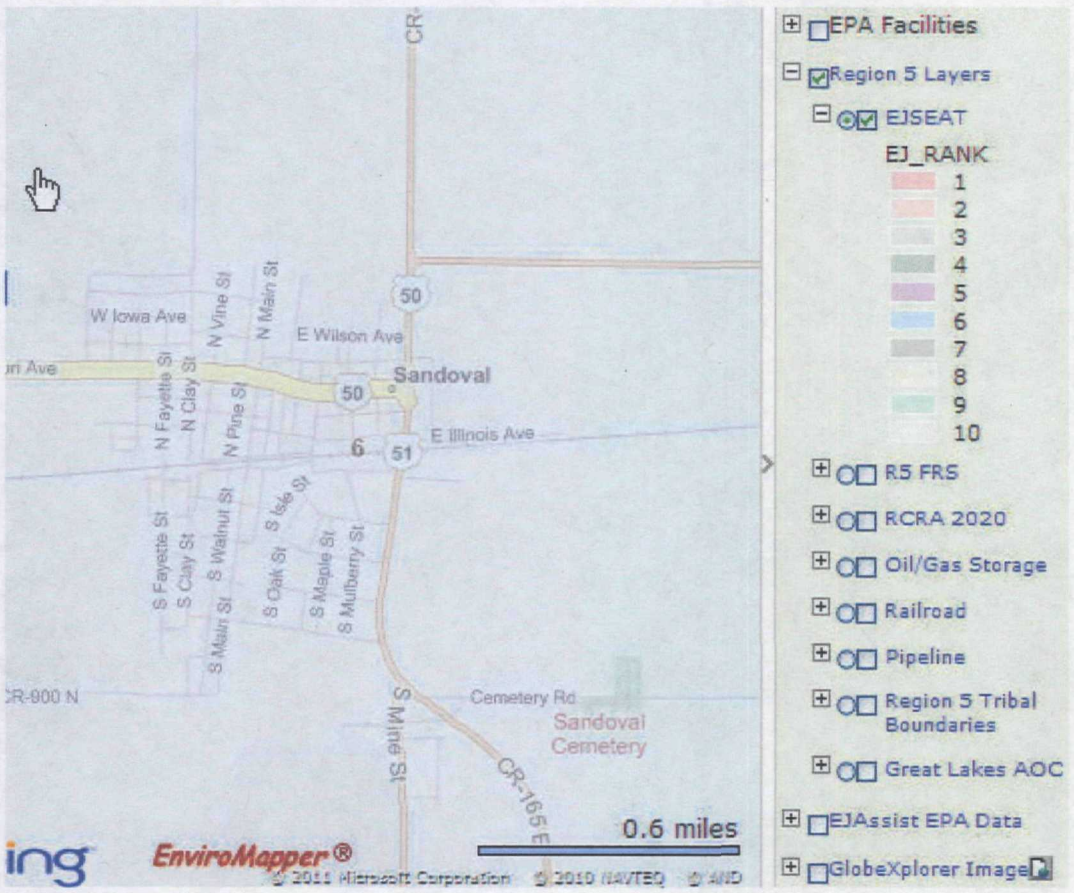
REGION 5 EJ ANALYSIS

SANDOVAL ZINC RESIDENTIAL SITE
SANDOVAL, MARION COUNTY, ILLINOIS
SEPTEMBER 2011

R5 Superfund EJ Analysis for the Sandoval Residential Site

The area surrounding the Sandoval Residential Site was screened for Environmental Justice (EJ) concerns using Region 5's EJ Assist Tool (which applies the interim version of the national EJ Strategic Enforcement Assessment Tool (EJSEAT)). Census tracts with a score of 1, 2, or 3 are considered to be high-priority potential EJ areas of concern according to EPA Region 5. The Sandoval Residential Site is in a census tract with a score of **6** (Figure 1). Therefore, Region 5 does not consider this site to be a high-priority potential EJ area of concern.

Figure 1.
Sandoval Residential Site Map Showing EJ SEAT Values For Surrounding Area



ATTACHMENT IV

INDEPENDENT GOVERNMENT COST ESTIMATE

SANDOVAL ZINC RESIDENTIAL SITE
SANDOVAL, MARION COUNTY, ILLINOIS

SEPTEMBER 2011

(REDACTED 7 PAGES)

NOT RELEVANT TO THE SELECTION OF THE REMOVAL ACTION